Recycler Lattice Up the Main Injector ramp

May 24, 2005

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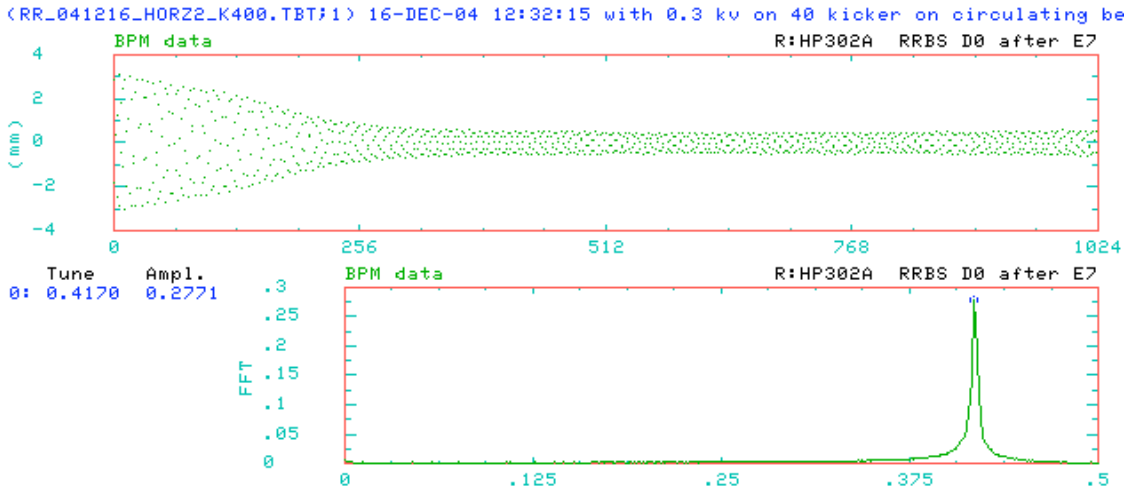
The study

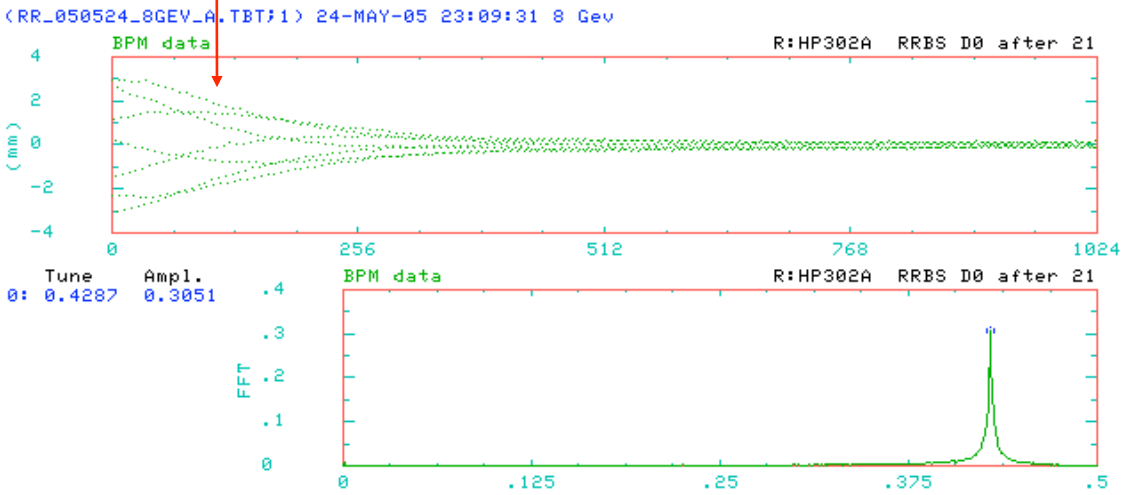
- Objectives
  - To compare the measured beta function during MI ramp
    - ✓ 8 GeV and 120 GeV.
- Measurements
  - Ping beam with 40 kicker
  - Set kicker timing relative to MI ramp.
  - Horizontal plane data only.
- Analyze data
  - Use only the first 100 turns.
  - Re-analyzed December data similarly.

TBT data

December data

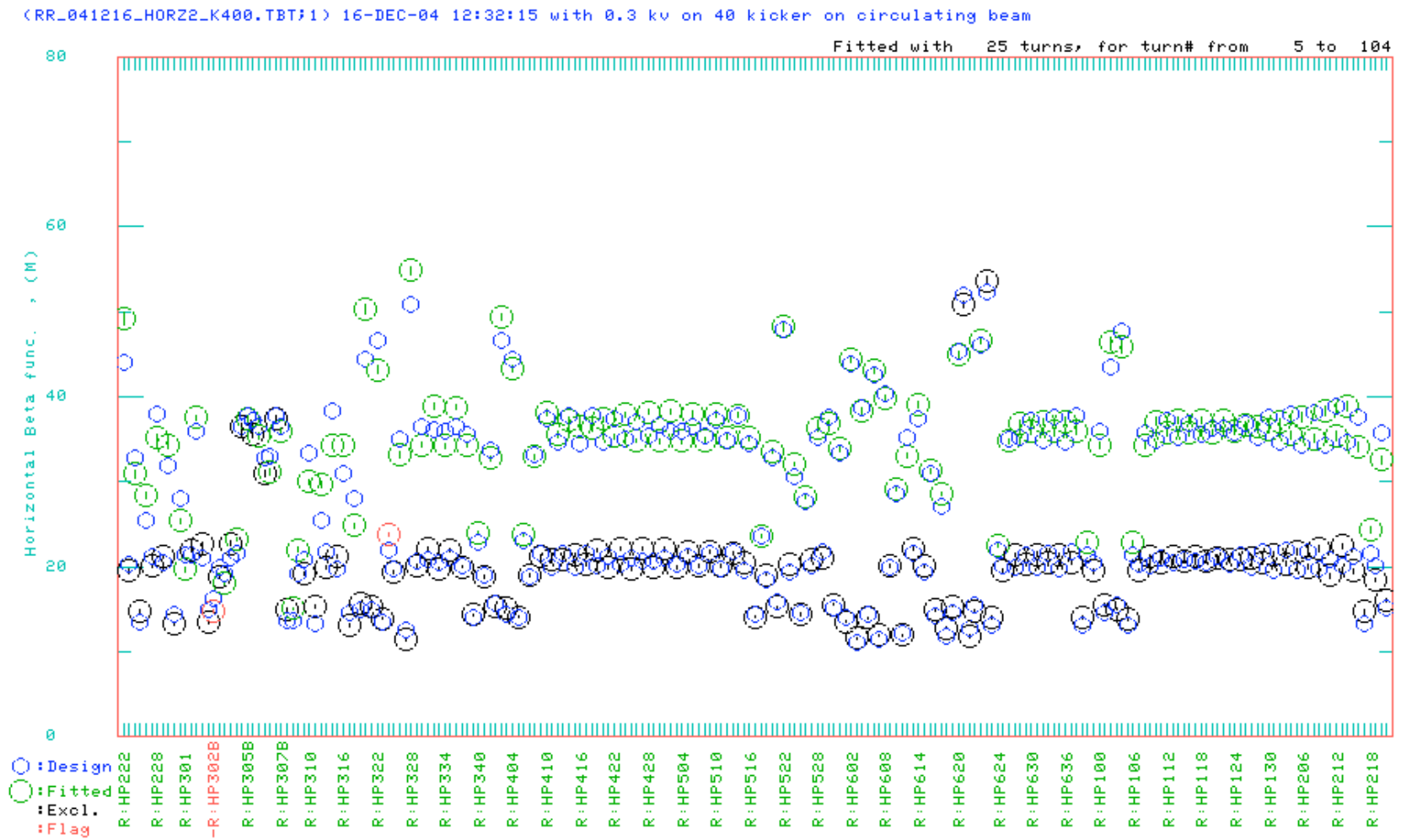


Use only the first 100 turns of data

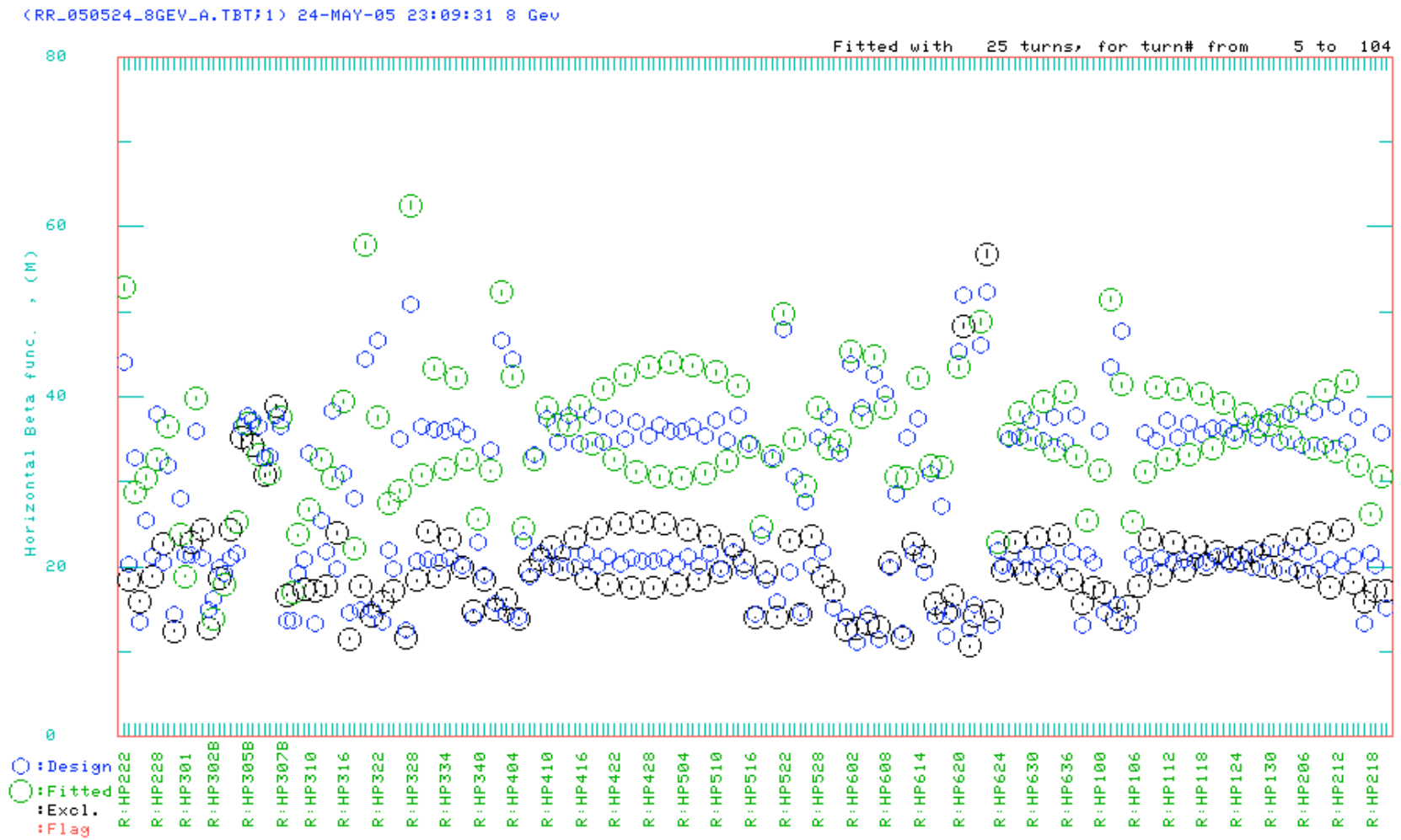


data taken on 5/24/05

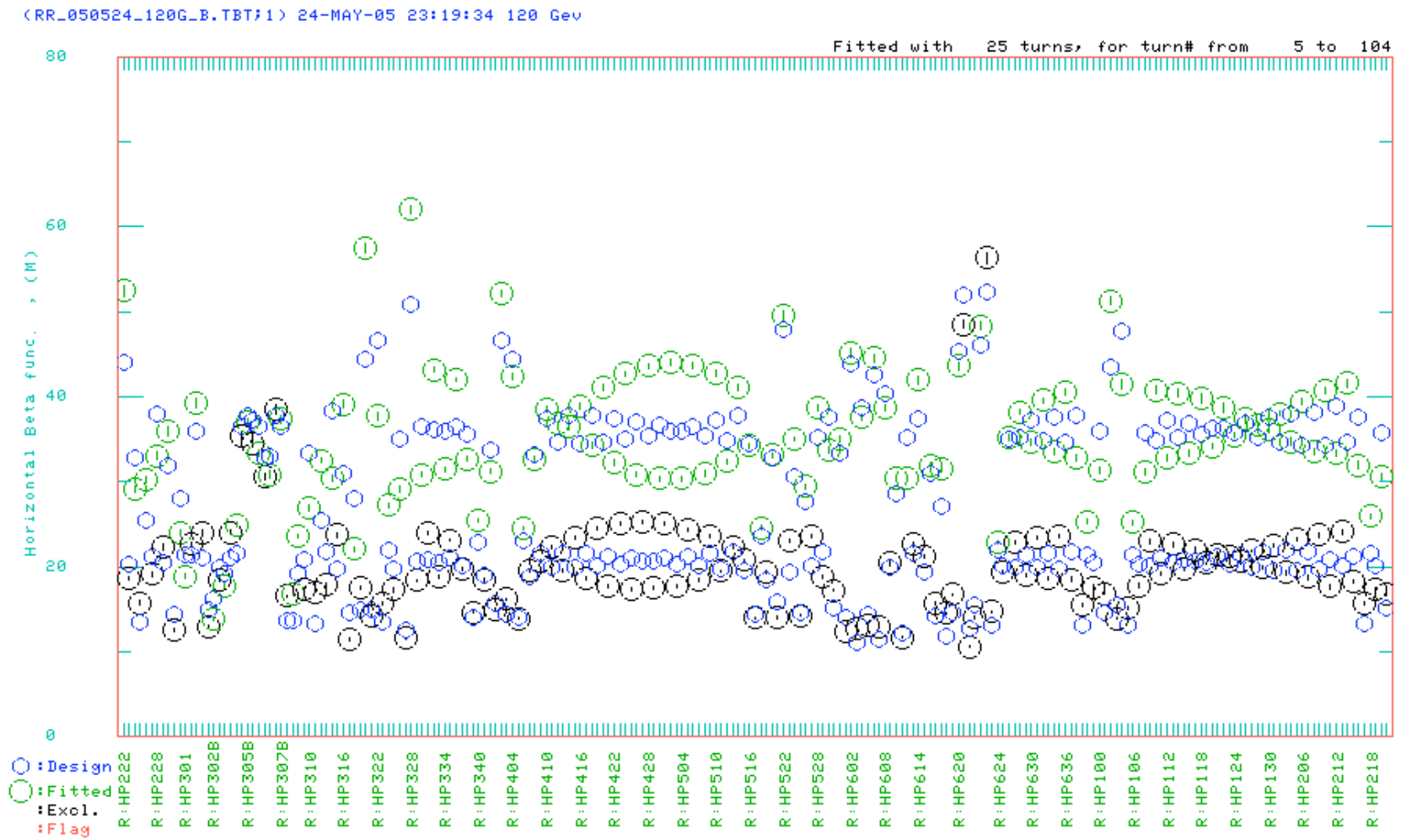
Horizontal beta function from December, 2004



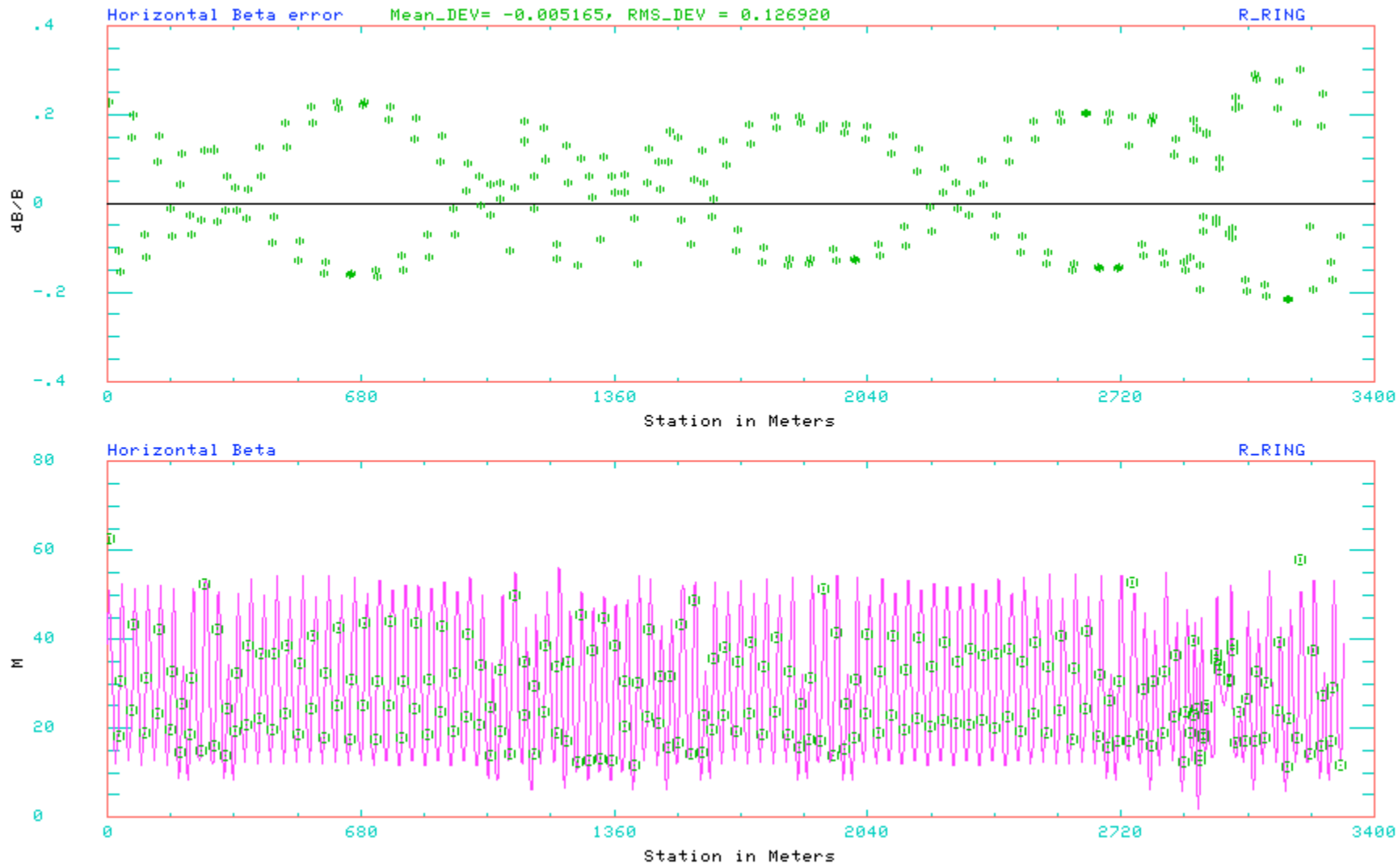
Horizontal beta function with MI at 8-GeV



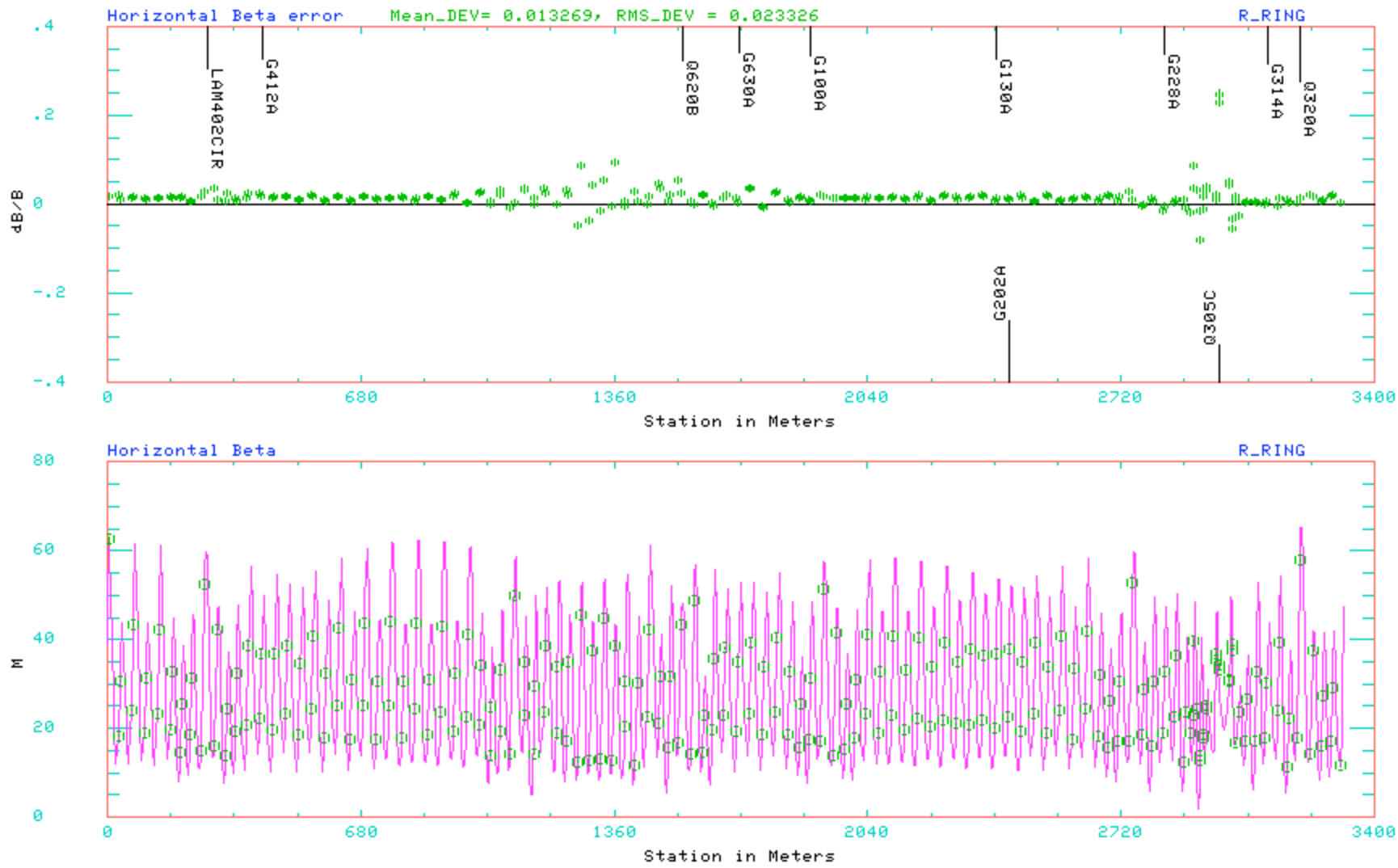
Horizontal beta with MI at 120 GeV



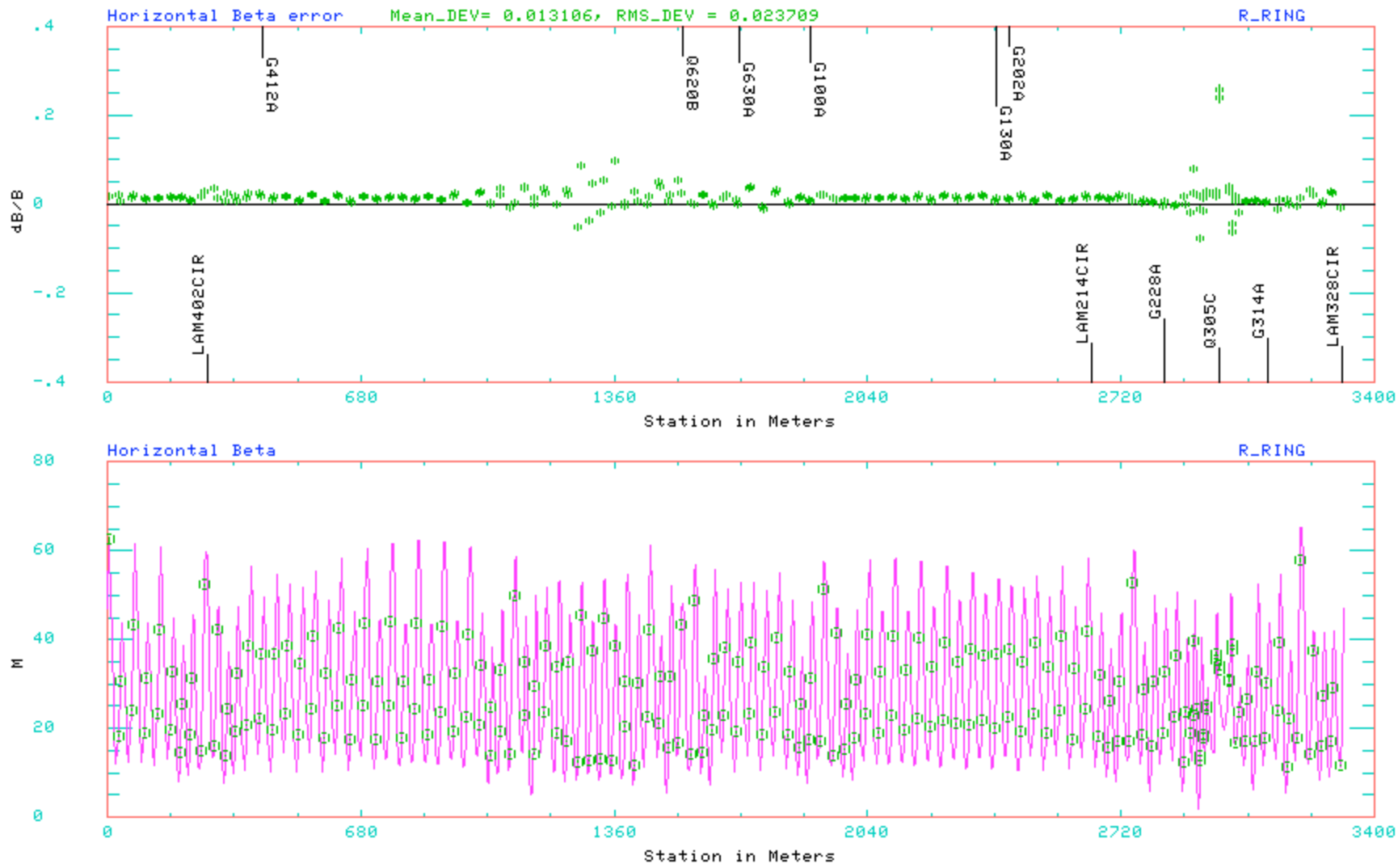
Beta wave as compared to R90 calculation



Matching the beta function with RR as transfer line



Closing the ring beta function matching



Initial lattice parameters used and quad field errors found

Conclusion

- Lattice function
  - Lattice is different from that of December, 2004.
    - ✓ Beta wave around 20-30 % from design.
  - No gross difference between MI at 8-GeV and at 120 GeV
- Potential quadrupole field error locations
  - Lambertsons
    - ✓ LAM328, LAM402, LAM214
  - Quads
    - ✓ Q305C, Q620B, Q320A
  - Gradient magnets
    - ✓ G228, G314
    - ✓ G412, G630, G100, G130, G202